

Chapter 5A-The Working Cell

Cellular Transport-I

Complete the table by checking the correct column for each statement.

Statement	Isotonic solution	Hypotonic Solution	Hypertonic Solution
1. Causes a cell to swell			
2. Doesn't change the shape of a cell			
3. Causes osmosis			
4. Causes a cell to shrink			

For each item in Column A, write the letter of the matching item in Column B.

Column A

- _____ 5. Transport protein that provides a tubelike opening in the plasma membrane through which particles can diffuse.
- _____ 6. Is used during active transport but not passive transport.
- _____ 7. Process by which a cell takes in material by forming a vacuole around it.
- _____ 8. Particle movement from an area of higher concentration to an area of lower concentration.
- _____ 9. Process by which a cell expels wastes form a vacuole.
- _____ 10. A form of passive transport that uses transport proteins.
- _____ 11. Particle movement from an area of lower concentration to an area of higher concentration.
- _____ 12. Transport protein that changes shape when a particle binds with it.

Column B

- a. Energy
- b. Facilitated Diffusion
- c. Endocytosis
- d. Passive transport
- e. Active transport
- f. Exocytosis
- g. Transport protein
- h. Channel protein

Use each of the terms below just once to complete the passage.

Glucose

Plasma Membrane

Homeostasis

Organism

Balance

Selective permeability

Living cells maintain a **(13)** _____ by controlling materials that enter and leave. Without this ability, the cell cannot maintain **(14)** _____ and will die. The cell must regulate internal concentrations of water, **(15)** _____, and other nutrients and must eliminate waste products.

Homeostasis in a cell is maintained by the **(16)** _____, which allows only certain particles to pass through and keeps other particles out. This property of a membrane is known as **(17)** _____. It allows different cells to carry on different activities within the same **(18)** _____.

Answer the following questions in complete sentences.

19. Does osmosis occur if a cell is placed in an isotonic solution?

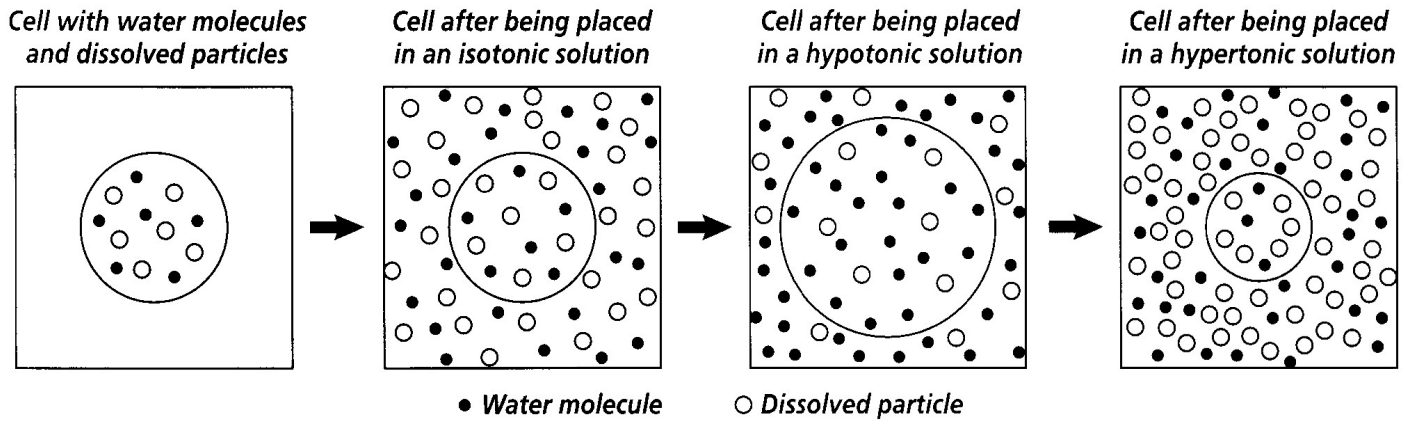
20. Why does water enter a cell that is placed in a hypotonic solution?

21. What happens to the pressure inside a cell that is placed in a hypertonic solution?

22. What can happen to animal cells when placed in a hypotonic solution? Explain.

23. What causes a plant to wilt?

Study the diagrams of the cells. Then circle the word that best completes each sentence.



When the cell is placed in an isotonic solution, water molecules move into and out of the cell at the same rate.

When the cell is placed in a hypotonic solution, more water molecules enter the cell than leave the cell.

When the cell is placed in a hypertonic solution, more water molecules leave the cell than enter the cell.

24. Placing a cell in a hypertonic solution causes the cell to (swell, shrink, stay the same).
25. Placing the cell in an isotonic solution causes the cell to (swell, shrink, stay the same).
26. Placing the cell in an hypotonic solution causes the cell to (swell, shrink, stay the same).

Answer the following questions in complete sentences.

27. Which type of transport protein is involved in active transport?

28. Why must cells use energy to move particles from a region of lower [] to a region of higher []?

29. What is the source of the energy inside the cell that is used in active transport?

30. Why is endocytosis considered a type of active transport?

31. What process of active transport is the reverse of endocytosis? Explain.
